

WHAT IS CLAIMED IS:

1. A self-inactivating recombinant vector comprising:
 - (a) lentiviral *gag*, *pol* and *rev* genes;
 - (b) an expression cassette comprising a transgene positioned under the control of a promoter that is active to promote detectable transcription of the transgene in a human hematopoietic progenitor cell; and
 - (c) an LTR region that has reduced promoter activity relative to wild-type LTR.

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2. The vector of claim 1, wherein the *gag*, *pol* and *rev* genes are HIV *gag*, *pol* and *rev* genes.

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3. The vector of claim 2, wherein the *gag*, *pol* and *rev* genes are HIV-1 *gag*, *pol* and *rev* genes.

4. The vector of claim 1, further defined as incapable of reconstituting a wild-type lentivirus through recombination.

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5. The vector of claim 4, wherein the vector does not express a functional lentiviral gene other than the *gag*, *pol* and *rev* genes.

6. The vector of claim 1, wherein the promoter is capable of promoting expression of the transgene at a signal-to-noise ratio of between about 10 and about 200.

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7. The vector of claim 6, wherein the promoter is capable of promoting expression of the transgene at a signal-to-noise ratio of between about 40 and about 200.

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8. The vector of claim 7, wherein the promoter is capable of promoting expression of the transgene at a signal-to-noise ratio of between about 150 and about 200.

9. The vector of claim 6, wherein the promoter is an EF1- α promoter, a PGK promoter, a gp91hox promoter, a MHC classII promoter, a clotting Factor IX promoter, a clotting Factor V111 promoter, an insulin promoter, a PDX1 promoter, a CD11 promoter, a CD4 promoter, a CD2 promoter or a gp47 promoter.

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10. The vector of claim 9, wherein the transgene is positioned under the control of the EF1- α promoter.

10 11. The vector of claim 9, wherein the transgene is positioned under the control of the PGK promoter.

12. The vector of claim 1, wherein the transgene is erythropoietin, an interleukin, a colony-stimulating factor, integrin α IIb β , a multidrug resistance gene, gp91hox, gp 47, an antiviral gene, a gene coding for blood coagulation factor VIII, a gene coding for blood coagulation factor IX, a T cell antigen receptor, a B cell antigen receptor, a single chain antibodies (ScFv), TNF, gamma interferon, CTLA4, B7, Melana, MAGE.

13. The vector of claim 12, wherein the transgene is gp91hox.

20 14. The vector of claim 12, wherein the transgene is gp 47.

15. The vector of claim 12, wherein the transgene is Interleukin-2.

25 16. The vector of claim 12, wherein the transgene is Interleukin-12.

17. The vector of claim 12, wherein the transgene is a gene coding for blood coagulation factor VIII.

30 18. The vector of claim 12, wherein the transgene is a gene coding for blood coagulation factor IX.

19. The vector of claim 1, further comprising a posttranscriptional regulatory sequence positioned to promote the expression of the transgene.

20. The vector of claim 19, wherein the posttranscriptional regulatory sequence is an intron positioned within the expression cassette.

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21. The vector of claim 20, wherein the intron is positioned in an orientation opposite the vector genomic transcript.

10 22. The vector of claim 19, wherein the posttranscriptional regulatory sequence is a posttranscriptional regulatory element.

15 23. The vector of claim 22, wherein the posttranscriptional regulatory element is woodchuck hepatitis virus posttranscriptional regulatory element (WPRE).

24. The vector of claim 23, wherein the posttranscriptional regulatory element is hepatitis B virus posttranscriptional regulatory element (HPRE).

20 25. The vector of claim 1, wherein the LTR region has been rendered substantially transcriptionally inactive by virtue of deletions in the U3 region of the 3' LTR.

26. A host cell transduced with a vector in accordance with claim 1.

27. The transduced host cell of claim 26, wherein the cell is a virus producer cell.

25 28. The transduced host cell of claim 27, wherein the producer cell is a 293T cell.

29. The host cell of claim 28, wherein the cell is a human hematopoietic progenitor cell.

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30. The transduced host cell of claim 29, wherein the human hematopoietic progenitor cell is a CD34⁺ cell.

31. A self-inactivating recombinant vector comprising:

5 (a) HIV-1 *gag*, *pol* and *rev* genes;

 (b) an expression cassette comprising a transgene positioned under the control of an EF1-a promoter that is active to promote detectable transcription of the transgene in a human hematopoietic progenitor cell at a signal-to-noise ratio of between about 150 and about 200; and

10 (c) an LTR region that has been rendered substantially transcriptionally inactive by virtue of deletions in the U3 region of the 3' LTR.

32. A method for transducing a human hematopoietic stem cell comprising contacting a population of human cells that include hematopoietic stem cells with a vector in accordance with claim 1 under conditions to effect the transduction of a human hematopoietic progenitor cell in said population by said vector.

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33. The method of claim 32, wherein the human hematopoietic stem cell population comprises CD34⁺ cells.

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34. The method of claim 32, wherein the cell population is treated to stimulate cell proliferation without substantial loss of stem cell pluripotency.

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35. The method of claim 32, wherein the stem cell is transduced *in vivo*.

36. The method of claim 32, wherein the stem cell is transduced *in vitro*.

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37. The method of claim 36, wherein the transduced stem cell is infused into a human subject.